case report

# Adenomyoepithelioma of the breast

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Myoepithelial cells are usually present between the epithelial cells and the basal lamina of the secretory elements of the mammary duct system of the breast.[1] Tumors derived from these cells are found in the skin, lungs, salivary glands and breast. Neoplasms of the myoepithelium are called myoepitheliomas, which may be benign or malignant. Tumors that arise from both epithelium and myoepithelial cells are called adenomyoepithelioma (AME). Adenomyoepithelioma of the breast is a rare entity. Although it is a benign tumor, locoregional recurrences and distant metastasis have also been reported.[1,2] Total surgical excision of the tumor with adequate margin and long-term follow-up is the treatment recommended for AME.[3,4] We report a case report on AME of the right breast that merits documentation due to its rarity.

## CASE

A 50-year-old female presented clinically with breathlessness of one month duration during April 2007. On review of her past history, she had presented with a painless mobile lump of size 8×7 cm at the upper, outer aspect of the right breast without fixation to skin and underlying structures in September 2004. There was no involvement of the right axillary or supraclavicular lymph nodes. The family history of the patient was unremarkable. Fine needle aspiration cytology and core biopsy of the breast lump showed ductal carcinoma. Routine hematological parameters, chest x-ray posterior-anterior view and ultrasound of the abdomen were normal. She had undergone modified radical mastectomy due to diagnosis of ductal carcinoma of the right breast. Histopathology examination of the primary lesion revealed solid sheets of round, oval spindle cells at places forming the outer layer of some glands. Many small tubular glands within the cell nests lined by columnar epithelial cells were present. A few glands also showed apocrine activity. Dense hyaline material was seen around the glands. Focal increase in cellularity, mild to moderate cellular atypia with small foci of necrosis and low mitotic activity was noted (Figures 1, 2). The base of the excision was free. Nipple, areola and adjacent breast tissue was normal. Similary axillary lymphnodes on histopathology, did not reveal any malignancy. The resected specimen was subjected for immunohistochemistry (IHC) study and it was positive for S-100 protein, SMA and cytokeratin. Based on clinical, histopathology and IHC report, the patient was diagnosed as having AME of the right breast. She was on follow-up at 3 months interval for first year and six months interval thereafter. Her routine clinical evaluation, x-ray chest and ultrasound of abdomen and pelvis were within normal limit up to September 2006. During April 2007, she presented with breathlessness for which she was evaluated and her CT scan of the thorax revealed a mass occupying the right hemithorax (Figure 3). Hematological and biochemical profiles of the patient were within normal limits. A metastatic workup did not reveal any other distant metastasis except lung involvement. Core needle biopsy of the lesion of thorax revealed similar histopathology as that of the breast lesion. The patient was treated with 6 cycles of combination chemotherapy consisting of cyclophosphamide 600 mg/m$^2$, epirubicin 90 mg/m$^2$, 5-fluorouracil 600 mg/m$^2$ on D1 at 3-week intervals. She achieved partial response at the completion of six cycles of the treatment. Subsequently, she died due to persistence of the metastatic disease.

## DISCUSSION

AME of the breast was first described by Hamperl in 1970.[5] AME patients are usually elderly and present with a solitary, nodular palpable mass which is well circumscribed.[6] The average size of the lesion is 2.5 cm and is mostly centrally located. The present case was a 50-year-old female who presented with a lesion of size 8×7 cm at the upper outer aspect of the right breast. The histogenesis of this tumor is unclear, but it has been suggested that it derives from myoepithelial overgrowth of long standing adenosis, fibroadenoma or other benign breast lesion which proceeds to benign adenomyoepithelioma and ends in a malignant tumor

that still may contain residues of its precursor lesion.[6] Three types of lesions, i.e. myoepithelioma, adenomyoepithelioma and myoepithelial carcinoma, arise from myoepithelial cell of the breast. AME is composed of a proliferating ductal epithelial and myoepithelial cells in a bilaminar pattern.[7] AME histologically is subclassified as spindle cell type, lobulated, tubular type and a combination of the above. These different histological subtypes behave differently in clinical presentation and follow up. The histopathology of AME appears to be of ductal structures composed of an inner layer of epithelial cells with eosinophilic cytoplasm and a prominent peripheral layer of myoepithelial cells with clear cytoplasm. The majority of the tumors have low mitotic activity (mitotic figures less than 3/10 high-power field). Associated focal apocrine, squamous or chondroid and osseous metaplasia may be seen. A patient with AME presenting with high mitotic activity, cellular pleomorphism, and infiltrating border are suggestive of malignancy.[8-10] Malignant changes may involve only one cellular element and more frequently epithelial rather than a myoepithelial component. On immunohistochemistery, myoepithelial cells exhibit positive reactions for SMA, smooth muscle myosin, vimentin, EMA, S-100 protein, while luminal epithelial cells are positive for cytokeratin, EMA and CEA.

The reported case presented with small tubular glands lined by columnar epithelial cells with surrounding solid sheets of round, oval spindle cells at places forming the outer layer of these glands. Therefore, this case was a combination of tubular and spindloid variety of AME. The present case had SMA, S-100 and cytokeratin positivity.

Other prolliferative breast lesions like sclerosing adenosis, fibroadenoma and tubular adenoma having epithelial and myoepithelial components can be considered in the differential diagnosis of AME. Lack of lobulocentric architecture rules out the sclerosing adenosis. Solid sheets of round, oval spindle cells exclude the probability of fibroadenoma and tubular adenoma.

In a review of the literature, all cases of AME are sporadic and no familial aggregation has been observed. None of the first-degree relatives of the patient have been reported with similar presentation.

Even though AME appears benign, local recurrence, nodal and distant metastasis have also been reported. The best predictor of local recurrence is an initial incomplete resection due to multinodularity and peripheral intraductal extension of the tumor.[2] Hence, complete surgical excision with wide margins is required.[11] Various cases have been reported in the literature where sampling or dissection of the axillary lymph nodes has

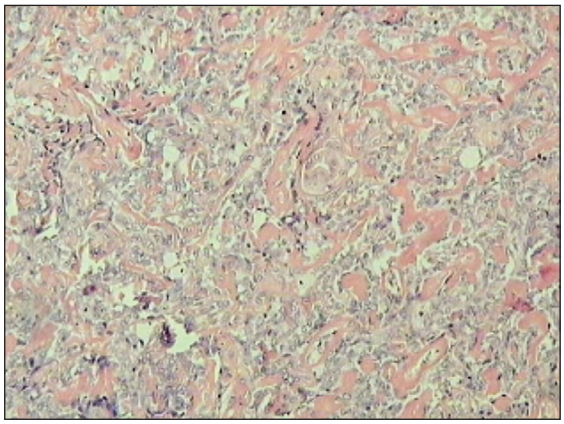

**Figure 1.** Photomicrograph showing sheets and cords of round, oval spindle cells forming the outer layer of some glands at places. Occasional tubular glands within these nests are lined by columnar cells. Focal increase cellularity and cellular pleomorphism (HE ×100).

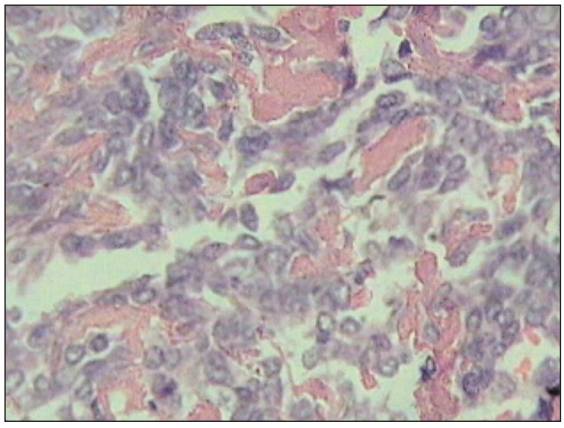

**Figure 2.** Photomicrograph showing solid sheets and cords of oval cells with mild nuclear pleomorphism and occasional mitotic figures (HE ×400).

**Figure 3.** CT scan thorax showing mass in the left hemithorax.

been performed as a part of the initial surgery, while sentinel node biopsy as a part of this initial procedure has not been mentioned.[12] Since, axillary nodal involvement is rare, axillary intervention may be considered an overtreatment in most cases and hence it is desirable to perform sentinel node biopsy even in cases with swollen nodes in the ipsilateral axilla.[12]

Patients with a rapid increase in size of tumor, poorly defined margins, marked distortion of the surrounding breast parenchyma, high cellularity and high mitotic activity should be suspected of malignancy. Having potent metastatic characterstics, AME is prone to spread hematogenously, especially when the tumor size is more than 2 cm. The metastasis may involve one or both the cellular components. Distant metastasis to the lung, liver, brain, bone, thyroid, chestwall and lymph nodes has been reported.[13-15]

Histologically, if a carcinomatous element is identified in an excised AME, it should be treated as a carcinoma.[16] Mastectomy with breast irradiation and axillary dissection are not appropriate for benign AME.[17] Atilli et al reported a case of aggressive AME where the patient had undergone a modified radical mastectomy (MRM), received local radiation to the chestwall and six courses of anthracycline-based chemotherapy. The tumor showed good chemosensitivity with the patient being in complete remission at 18 months follow-up.[18]

Due to the initial diagnosis of carcinoma, MRM was done in the present case. However, on histopathology, after MRM, it was diagnosed as AME for which no further treatment was given. With the radical surgery, no local recurrence was encountered until the patient died of metastatic disease. Due to subsequent development of pulmonary metastasis she was given six courses of anthracycline-based (CEF) chemotherapy and attained a partial response. Whether the distant metastasis in this case could have been prevented by giving systemic adjuvant chemotherapy is unclear, but the appropriate indications and chemoregimen is yet to be defined in patients with AME. Patients with marked distortion of the surrounding breast parenchyma, high mitotic activity, high cellularity and considering the epithelial or myoepithelial component of the breast lesion, these patients should be subjected to anthracycline-based chemotherapy.

In conclusion, AME is an unusual breast tumor. With the awareness of the disease and meticulous histopathological observations of proliferating solid sheets of round, ovoid to spindloid myoepithelial cells around small tubular glands lined by columnar cells excludes the possibilities of duct or lobular carcinoma. Complete excision of the tumor is necessary for accurate diagnosis and definitive treatment, avoiding unnecessary mastectomy and axillary dissection. Although considered an indolent neoplasm, it can show local recurrence and rarely distant metastasis. Malignant transformation of one or both the components of AME may occur. Patients with AME presenting with marked distortion of the surrounding breast parenchyma, high mitotic activity, high cellularity and necrosis should be subjected to anthracycline-based combination chemotherapy.

## REFERENCES

**1.** Tavassoli FA. Myoepithelial lesions of the breast: myoepitheliosis, adenomyoepithelioma and myoepithelial carcinomas. Am J Surg Pathol. 1991;15:554-568.
**2.** Rosen PP. Adenomyoepithelioma of the breast. Hum Pathol. 1987;18:1232-7.
**3.** Parks RW, Clarke M, Cranley B. Adenomyoepithelioma of the breast. Int J Clin Pract. 1997;51:414-5.
**4.** Sing Gill T, Clarke D, Douglas-Jones AG, Sweetland HM, Mansel RE. Adenomyoepithelioma of the breast. A diagnostic dillema. Eur J Surg Oncol. 2000;26:316-8.
**5.** Hamperl H. The myoepithelia (myoepithelial cells) normal state, regressive changes, hyperplasia and tumours. Curr Top Pathol. 1970;53:161-213.
**6.** Choi JS, Bae JY, Jung WH. Adenomyoepithelioma of the breast. Yonsei Med J. 1996;37:284-9.
**7.** Nomura K, Fukunaga M, Uchida K, Aizawa S. Adenomyoepithelioma of the breast with exaggerated proliferation of epithelial cells. Report of a case. Pathol Int. 1996;46:1011-1014.
**8.** Loose JH, Patchefsky AS, Hollander IJ, Lavin LS, Cooper HS, Karz SM. Adenomyoepithelioma of the breast. A Spectrum of biological behaviour. Am J Surg Pathol. 1992;16:868-76.
**9.** Ahmed AA, Heller DS. Malignant myoepithelioma of the breast with malignant proliferation of the epithelial and myoepithelial elements. A case report and review of literature. Arch Pathol Lab Med. 2000;24:632-6.
**10.** Gatti G, Viale G, Simsek S, Zurrida S, Intra M, Caldarella P, Luini A. Adenomyoepithelioma of the breast, presenting as a cancer. Tumori. 2004;90:337-9.
**11.** Giovanna G, Giuseppe V, Serife S, Sufano Z, Mattia I, Pietro C, Alberto L. Adenomyoepithelioma of the breast presenting as a cancer. Tumori. 2004;90:337-9.
**12.** Hikino H, Kodama K, Yasui K, Ozaki M, Nagaoka S, Miura H. Intracystic adenomyoepithelioma of the breast: case report and review. Breast Cancer. 2007;14:429-33.
**13.** Bult P, Verweil JMM, Wobbes T, Kooy-smils MM, Biest J, Holland R. Malignant adenomyoepithelioma of the breast with metastasis in the thyroid gland 12 years after the excision of the primary tumour: a case report and review of literature. Virchows Arch. 2000;436:158-66.
**14.** Kinara M, Yokomise H, Irie A, Kobayashi S, Kushida Y, Yamauchi A. Malignant myoepithelioma of the breast with lung metastasis. A report of a case. Surg Today. 2001;31:899-903.
**15.** Jones C, Tooze H, Lakshani SR. Malignant adenomyoepithelioma of the breast metastasizing to the liver. Virchows Arch. 2003;442:504-6.
**16.** Howlett DC, Mason CH, Biswas S, Sangle PD, Rubin G, Allan SM. Adenomyoepithelioma of the breast: spectrum of disease with associated imaging and pathology. Am J Roent. 2003;180:799-803.
**17.** Chun-Ying H, Shyr-Ming SC, Hock-Liew E, Sheung FK. Adenomyoepithelioma of the breast. Tumori. 2007;93:493-5.
**18.** V Suresh A, Kamal S, Lakshmaiah K, Ullas B, Malathi M, Ramachandra C. Malignant adenomyoepithelioma of the breast: case report. Indian J Surg. 2007;69:14-16.